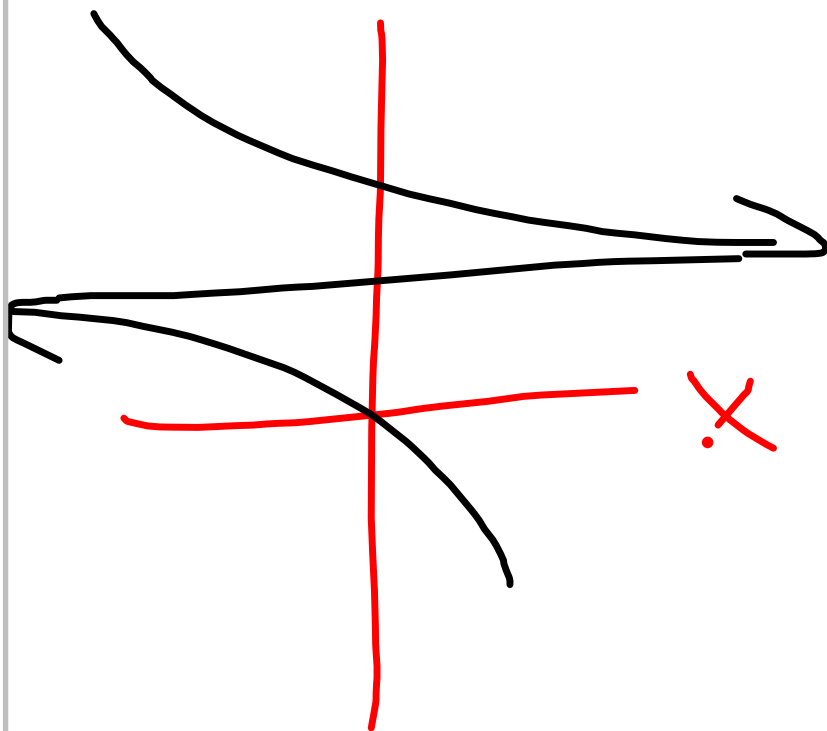


$$y = \frac{5x+2}{x-3}$$

$$V.A. \rightarrow x=3$$

$$H.A. \rightarrow y=5$$



$$y = \frac{\boxed{3}x^2 + 1}{x^2 - 1}$$

$$\text{V.A.} \rightarrow x = \pm 1$$

$$\text{H.A.} \rightarrow y = 3$$

$$Y = \frac{2x}{5x-4}$$

$$V.A \rightarrow x = \frac{4}{5}$$

$$H.A \rightarrow y = \frac{2}{5} = .4$$

$$Y = \frac{1}{x-5}$$

$$V.A. \rightarrow x=5$$

$$H.A. \rightarrow y=0 \text{ (x-axis)}$$

$$Y = \frac{x^2}{x+1}$$

$$\text{V.A.} \rightarrow x = -1$$

$$\text{H.A.} \rightarrow \text{none}$$

Slant asymptote

$$Y = \frac{1}{x^2 + 1}$$

V.A. \rightarrow none

H.A. $\rightarrow Y = 0$ (x-axis)
(bigger power in denominator)

①

$$y = \frac{2x}{x}$$

②

$$y = \frac{x^3 + x^2 + 5}{x^2 + 9}$$

③

$$y = \frac{x^3 - 1}{x^2 + 1}$$

④

$$y = \frac{x^2 - 9}{x + 3}$$

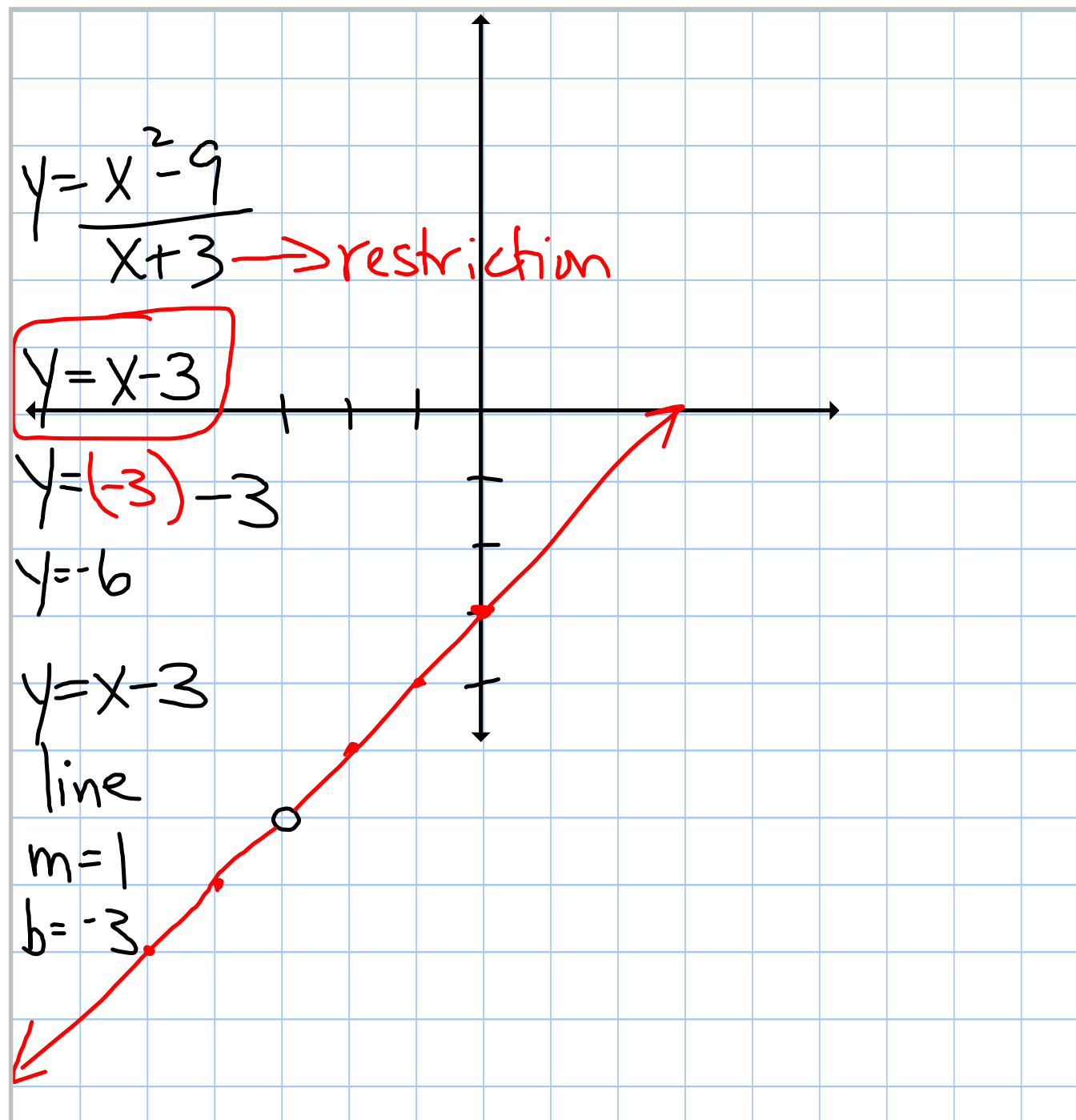
$$y = \frac{x^2 - 9}{x + 3}$$

$$y = \frac{(x-3)(\cancel{x+3})}{\cancel{(x+3)}}$$

V.A. \rightarrow none

H.A. \rightarrow none

Domain $x \neq -3$



$$\textcircled{1} \quad y = \frac{1}{x-2} \quad \begin{array}{l} \text{V.A.} \rightarrow x=2 \\ \text{H.A.} \rightarrow y=0 \end{array}$$

$$\textcircled{2} \quad y = \frac{\cancel{1}x^2 - 4}{\cancel{x^2} + 2x} \quad \begin{array}{l} \text{V.A.} \rightarrow x=0 \\ \text{H.A.} \rightarrow y=1 \end{array}$$

$$\textcircled{3} \quad y = \frac{5x-4}{x+2} \quad \begin{array}{l} \text{V.A.} \rightarrow x=-2 \\ \text{H.A.} \rightarrow y=5 \end{array}$$

$$\textcircled{4} \quad y = \frac{x^3 - 1}{x+1} \quad \begin{array}{l} \text{V.A.} \rightarrow x=-1 \\ \text{H.A.} \rightarrow \text{none} \end{array}$$

$$y = \frac{5x - 4}{x + 2}$$

V.A. $\rightarrow x = -2$
H.A. $\rightarrow y = 5$

Zeros $\rightarrow \left(\frac{4}{5}, 0 \right)$
 $5x - 4 = 0 \rightarrow$ or $(.8, 0)$

$$y = \frac{\cancel{1}x^2 - 4}{\cancel{x^2} + 2x} \quad \text{V.A.} \rightarrow x=0$$
$$\quad \quad \quad \text{H.A.} \rightarrow y=1$$

zeros $\rightarrow (2, \underline{0})$

$$x-2=0$$

$$y = \frac{1}{x-2}$$

V.A. $\rightarrow x=2$
H.A. $\rightarrow y=0$

Zeros
roots
x-intercepts

none

$$y = \frac{x^2 - 4}{x^2 + 2x}$$

hole

$$y = \frac{\cancel{(x+2)}(x-2)}{x\cancel{(x+2)}}$$

$$y = \frac{x^3 - 1}{x + 1} = \frac{(x+1)(x^2 + x + 1)}{(x+1)}$$

$$\begin{aligned} x^3 - 1 &= (x+1)(x^2 - x - 1) \\ &= (x+1)(x^2 + x + 1) \end{aligned}$$

$$y = \frac{x^3 - 1}{x + 1}$$

zeros $\rightarrow (1, 0)$

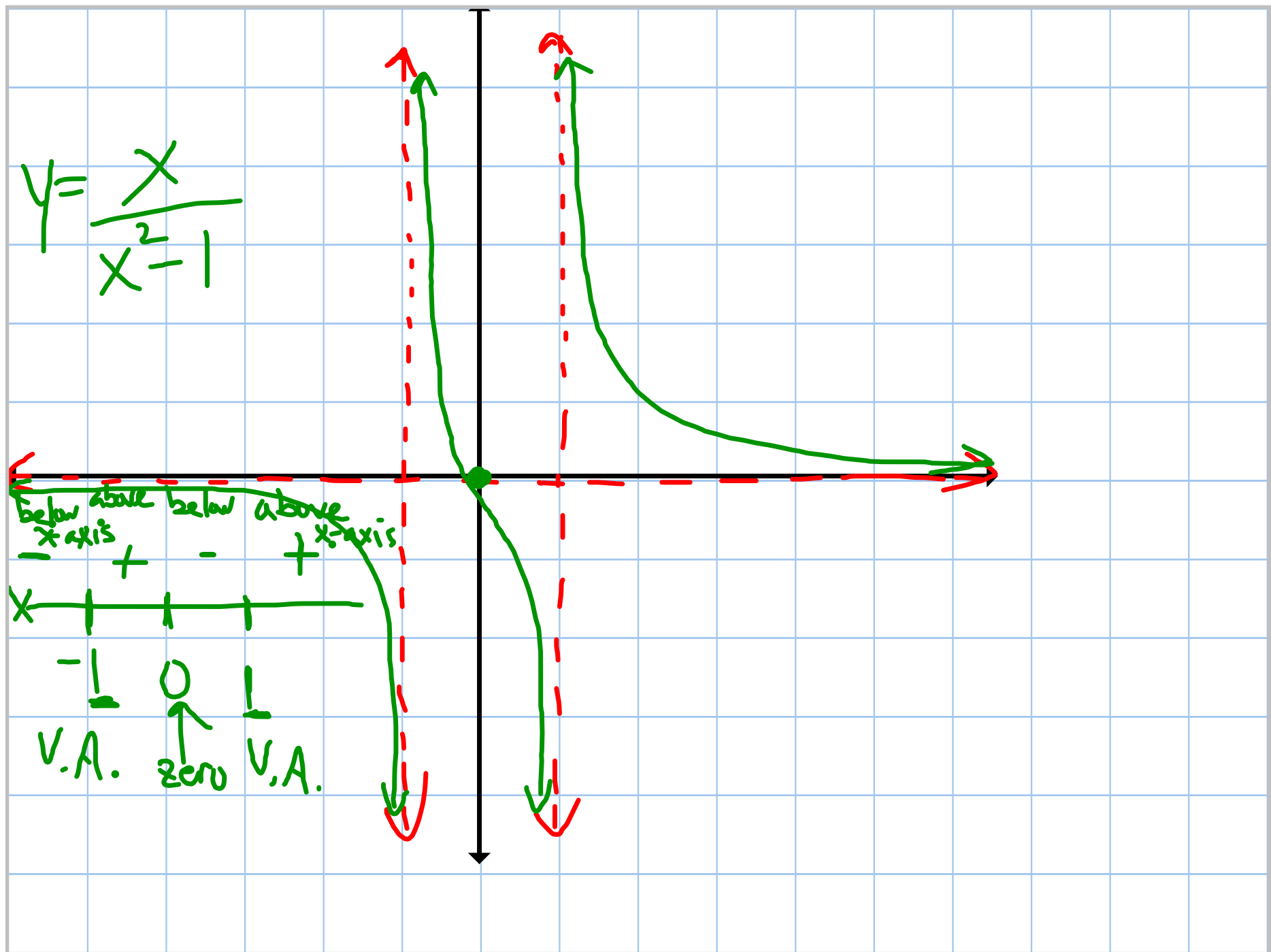
$$(x - 1)(x^2 + x + 1)$$

$$y = \frac{x}{x^2 - 1}$$

$$\text{V.A.} \rightarrow x = \pm 1$$

$$\text{H.A.} \Rightarrow y = 0 \text{ (x-axis)}$$

$$\text{zeros} \Rightarrow (0, 0)$$



$$y = \frac{1}{x-2}$$

$$\textcircled{1} \quad y = \frac{1}{x^2}$$

$$\textcircled{2} \quad y = \frac{x+1}{x^2-1}$$

$$\textcircled{3} \quad y = \frac{x+2}{x^2-9}$$

$$\textcircled{4} \quad xy - y + 1 - 2x = 0$$

Library
of
Functions
Due on
Monday ...